

Application No. 10/019,148

VERSION WITH MARKINGS TO SHOW CHANGES MADE

Please amend claims 1-20 as follows:

1. (Amended) An [E]electro-mechanical drive device for an adjustment device[s] of a motor vehicle, ~~[more particularly for a window lifter, which has]~~comprising:

a gearing with a gear housing [~~(A2, A2', B2, C2, D2, E2', D2'')~~];

an electric motor [~~(A1, C1, D1, D1'')~~] mechanically connected to the gearing;

a control device [~~(A5, A5', B5, C5, D5', D5'', E5)~~] mounted in the gearing housing [~~(A2, A2', B2, C2, D2, D2', D2'')~~] and having at least one power semi-conductor for controlling the electric motor [~~(A1, C1, D1, D1'')~~]; and

means [~~(A9, A9', B9, C9, D9, D9', D9'', E9)~~] thermally coupled to the at least one power semi-conductor as a heat sink for drawing off waste heat from the at least one power semi-conductor, wherein the means [~~(A9, A9', B9, C9, D9, D9', D9'', E9)~~] is [are] integrated in the gear housing [~~(A2, A2', B2, C2, D2, D2', D2'')~~].

2. (Amended) An [E]electro-mechanical drive device according to claim 1, ~~[characterised in that]~~ wherein for the purpose of coupling, the means [~~(A9, A9', B9, C9, D9, D9', D9'', E9)~~] and a power semi-conductor housing [~~(A5, A5', B5, C5, D5', E5)~~] are fixed with force-locking engagement against one another in order to reduce a heat transfer resistance.

3. (Amended) An [E]electro-mechanical drive device according to claim 2, ~~[characterised in that]~~ wherein for the force-locking engagement, [connection] the means [~~(A9, A9', B9, C9, D9, D9', D9'', E9)~~] is [are] spring-tensioned through a spring element against the power semi-conductor housing [~~(A5, A5', B5, C5, D5', E5)~~].

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4. (Twice Amended) An [E]lectro-mechanical drive device according to claim 1, ~~[characterised in that]~~ wherein a heat conducting means is mounted for thermal coupling between the means ~~[(A9, A9', B9, C9, D9, D9', D9'', E9)]~~ and a power semi-conductor housing ~~[(A5, A5', B5, C5, D5', D5'', E5)]~~.

5. (Twice Amended) An [E]lectro-mechanical drive device according to claim 1, ~~[characterised in that]~~ wherein the gear housing ~~[(A2, A2', B2, C2)]~~ has an opening for inserting the means ~~[(A9, A9', B9, C9)]~~ and guide elements for positioning the means ~~[(A9, A9', B9, C9)]~~ in an end position, and ~~[that]~~ the ~~[inserted]~~ means ~~[(A9, A9', B9, C9)]~~ is ~~[in particular]~~ lockable in the end position.

6. (Twice Amended) An [E]lectro-mechanical drive device according to claim 1, ~~[characterised in that]~~ wherein the means ~~[(C9, D9, D9', D9'', E9)]~~ ~~[are]~~ is injection moulded at least in part in an injection moulded plastics housing ~~[(C2, D2, D2', D2'')]~~ of the gearing.

7. (Twice Amended) An [E]lectro-mechanical drive device according to claim 1, ~~[characterised in that]~~ wherein the gear housing has supporting parts, the means ~~[(C9, D9, D9', E9)]~~ is ~~[are]~~ hermetically sealed in the gear housing ~~[(C2, D2, D2'')]~~ against fluids and dust particles, and ~~[that]~~ the means ~~[(C9, D9, D9', E9)]~~ is ~~[are]~~ positioned against a wall ~~[(C92, D92, D92'')]~~ of the gear housing ~~[(C2, D2, D2'')]~~ wherein the wall ~~[(C92, D92, D92'')]~~ is thinner than the supporting parts of the gear housing ~~[(C2, D2, D2'') in order to have a lower heat transfer resistance]~~.

8. (Twice Amended) An [E]lectro-mechanical drive device according to claim 1, ~~[characterised in that]~~ wherein the means ~~[(C9, D9, D9', D9'', E9)]~~ ~~[have]~~ acts as a heat conductor ~~[(C9, D9, D9',~~

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~~D9', D9')~~ and is coupled ~~[a further coupling]~~ with a cooling element to discharge the waste heat diverted away from the at least one power semi-conductor to the cooling element, and ~~[that]~~ the cooling element is ~~[in particular]~~ a support plate on which the gear housing ~~[(E2, D2, D2', D2'')]~~ is fixed.

9. (Amended) An ~~[E]~~electro-mechanical drive device according to claim 8, ~~[characterised by]~~ further comprising a mechanical connection between the heat conductor ~~[(E9, D9, D9', D9'', E9)]~~ and the gear housing ~~[(E2, D2, D2', D2'')]~~, and ~~[by]~~ a fastening element ~~[(E90, D90, D90', D90'', E90)]~~ integrated in the heat conductor ~~[(E9, D9, D9', D9'', E9)]~~ for fixing the gear housing ~~[(E2, D2, D2', D2'')]~~ on the cooling element.

10. (Twice Amended) An ~~[E]~~electro-mechanical drive device according to claim 1, ~~[characterised in that]~~ wherein a bearing ~~[(E9115)]~~ for a gear element ~~[(E115)]~~ of the gearing is integrated in the means ~~[(E9)]~~.

11. (Amended) An ~~[E]~~electro-mechanical drive device according to claim 10, ~~[characterised in that]~~ wherein the means ~~[(E9)]~~ ~~[have]~~ has positioning elements for positioning the control device ~~[(E2)]~~ relative to at least one of the gear element ~~[(E115) or to]~~ and a magnet ~~[(E155)]~~ fixed on the gear element ~~[(E115)]~~.

12. (Twice Amended) An ~~[E]~~electro-mechanical drive device according to claim 1, ~~[characterised in that]~~ wherein the means is a cooling lid, an opening ~~[(A25)]~~ of the gear housing ~~[(A2, A2', B2)]~~ is closed by ~~[a]~~ the cooling lid ~~[(A9, A9', B9) as means (A9, A9', B9)]~~ and ~~[that]~~ the cooling lid ~~[(A9, A9')]~~ has ~~[in particular]~~ cooling ribs.

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13. (Amended) An [E]electro-mechanical drive device according to claim 12, wherein the opening is sealed by a material connection, comprising one of ultra sound welding of the cooling lid [~~(A9, A9', B9)~~] to an edge of the opening [~~(A25) or~~], and sticking of the cooling lid [~~(A9, A9', B9)~~] to an edge of the opening [~~(A25)~~] through an adhesive between the cooling lid [~~(A9, A9', B9)~~] and an edge of the opening [~~(A25)~~].

14. (Twice Amended) An [E]electro-mechanical drive device according to claim 1, [~~characterised in that~~] wherein conductor panels which are insulated from each other are arranged on the means [~~(A9, A9', B9, C9, D9, D9', D9'', E9)~~] to connect at least one structural element[s] and at least one interface [s] of the control device [~~(A5, A5', B5, C5, D5', D5'', E5)~~].

15. (Amended) An [E]electro-mechanical drive device according to claim 14, [~~characterised in that~~] wherein the conductor panels have contact elements which can be contacted during fitting of the means [~~(A9, A9', B9, C9, D9, D9', D9'', E9)~~].

16. (Amended) A [M]method for manufacturing an electro-mechanical drive device for adjustment devices of a motor vehicle, [~~more particularly for a window lifter, which has~~] wherein the drive device includes in the assembled state:

a gearing in a gear housing; [~~(A2, A2', B2, D2, D2', D2'')~~]

an electric motor [~~(A1, D1, D1'')~~] mechanically connected to the gearing;

a control device [~~(A5, A5', B5, D5', D5'', E5)~~] with a power semi-conductor and mounted in the gear housing [~~(A2, A2', B2, D2, D2', D2'')~~] and controlling the electric motor [~~(A1, D1, D1'')~~]; and

[~~has~~] a means [~~(A9, A9', B9, D9, D9', D9'', E9)~~] integrated in

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the gear housing [~~(A2, A2', B2, B2, B2', B2', B2')~~] as a heat sink [~~wherein the power semi-conductor is~~], the method comprising:

thermally [coupled] coupling the power semi-conductor to the means [(A9, A9', B9, B9, B9', B9', E9)] as a heat sink [at the same time as]; and

simultaneously at least one of mounting the means [(A9, A9', B9, B9, B9', B9', E9)] as a heat sink [or as] and fitting the control device [(A5, A5', B5, B5', B5', E5)].

17. (Amended) The [M]method according to claim 16, [characterised in that for the purpose of coupling] wherein the means is a heat conducting means [(C9, B9', E9)] and is fixed as heat sink with the gear housing [(C2, B2', E2)] on a support plate, and [wherein] the heat conducting means [(C9, B9', E9)] is pressed against the housing of the power semi-conductor of the control device [(C5, B5', E5)] through [the] a fastening.

18. (Amended) The [M]method according to claim 16, [characterised in that] wherein the means [(B9)] is moved from a first mechanically stable state without thermal coupling to the power semi-conductor into a second mechanically stable state for coupling in order to thermally couple the means [(B9)] through contact in the second mechanically stable state with the housing [(B5)] of the power semi-conductor.

19. (Amended) The [M]method according to claim 16, [characterised in that] wherein the means is [as means] a cooling lid [(A9, A9')] and is welded by ultrasound into an opening [(A25)] of the gear housing [(A2, A2')] up to contact with the housing [(A9')] of the power semi-conductor.

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20. (Amended) A [~~Use of a~~] hermetically sealed gear housing [~~(D2, D2', D2'')~~] of an electro-mechanical drive device of an adjustment device for motor vehicles [~~, more particularly for window lifters,~~] for diverting waste heat from a power semi-conductor which is integrated in a control device [~~(D5', D5'', E5)~~] in the gear housing [~~(D2, D2', D2'')~~] wherein at least a part of the gear housing [~~(D2, D2', D2'')~~] is thermally coupled to the power semi-conductor to draw off the waste heat.

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